PROBLEMS FOR SOLUTION.

ALGEBRA.

259. Proposed by ARTEMUS MARTIN, M. A., Ph. D., LL. D., Washington, D. C.

On page 167 of George Bruce Halsted's *Metrical Geometry* (Mensuration), Boston, 1881, Table of Scalene Triangles, is found the following triangle, viz., Sides 21, 61, 65; Area 420. The sides of a rational scalene triangle, whose sides have no common divisor, can not all be odd; one must be even and the other two odd. It is required to find the error in the sides of the above triangle, assuming that the area is correct.

260. Proposed by O. E. GLENN, Ph. D., Springfield, Mo.

The necessary and sufficient condition that a binary form be a perfect nth power is that its Hessian vanish.

261. Proposed by REV. R. D. CARMICHAEL, Hartselle, Ala.

Sum to infinity the series, $\frac{1}{n^p}+\frac{3}{n^{2p}}+\frac{5}{n^{3p}}+\frac{7}{n^{4p}}+\frac{9}{n^{5p}}+\ldots\ldots$

AVERAGE AND PROBABILITY.

176. Proposed by T. N. HAUN, Mohawk, Tenn.

A cube being cut at random by a plane, what is the chance that the section is a hexagon? (Problem 72, p. 503, Williamson's *Integral Calculus.*)

CALCULUS.

217. Proposed by PROFESSOR F. ANDEREGG, Oberlin College, Oberlin, Ohio.

Find $\underset{n=\infty}{\text{Lim}} \frac{1}{n}\sqrt[n]{[(n+1)(n+2)\ldots\ldots(2n)}$.

218. Proposed by REV. R. D. CARMICHAEL, Hartselle, Ala.

Evaluate (a) $\int_0^{\frac{1}{2}\pi} \frac{\sin mx \sin nx}{\sin x}dx$; (b) $\int_0^{\frac{1}{2}\pi} \frac{\cos mx \sin nx}{\sin x}dx$, where n is a positive integer. Also, modify the result for the case of m an integer.

219. Proposed by C. N. SCHMALL, College of the City of New York, New York City.

In the article "Infinitesimal Calculus" in the *Encyclopaedia Britannica* Vol. XIII, page 24, I notice the following: "Of all triangular pyramids standing on a given triangular base, and of given altitude, find that whose surface is the least." A solution is required.